Space Weather Forecast

Issued on Friday, 03 November 2023 at 01:15 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Further Moderate-class likely flares throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with two Moderate class flares, one from AR3474 in the southeast and the other from an unnumbered region that is now rotating onto the visible disc over the southeast limb. AR3474 remains the largest and most magnetically complex region currently visible, but has exhibited some slight decay and separation of the large trailing spot during the period, whilst the penumbra on the lead spot has simplified to become symmetric. The new region rotating onto the southeast limb is likely to emerge as a significant large region, probably overtaking AR3474 in terms of size and magnetic complexity.

An eruption of a long rope of plasma (filament) from the northeast quadrant was observed leaving the Sun early on 02 Nov and has been analysed as not being Earth-directed. No other potentially Earth-directed CME's have been apparent in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind speeds started at slightly elevated levels but steadily declined to end the period at background levels, following cessation of the recent high-speed stream. Total magnetic field strength has been weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is expected, with further isolated Moderate-class flares likely. The most likely source of significant flares are AR3473 and the new region emerging onto the southeast limb.

Solar Wind / Geomagnetic Activity: A Coronal Mass Ejection (CME) that left the sun late on 31 Oct may give Earth a glancing blow late tomorrow (04 Nov) or early day 3 (05 Nov). No other potential CME's are expected during the period, and also no coronal hole influence. Geomagnetic activity is expected to be mostly Quiet, with a chance of isolated Unsettled intervals. However, any potential arrival of the CME from 31 Oct could see activity increase to Active levels, with a slight chance of Minor geomagnetic storm intervals, late tomorrow (04 Nov) or early day 3 (05 Nov).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	20	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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